Georgii Bogdanov

Personal information

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Education

2019 – 2023 Department of Chemical and Biochemical Engineering, University of California Irvine, California, USA
- Ph.D. «Chemical and Biochemical Engineering », Advisor – Gorodetsky A.A.

2019 – 2022 Department of Chemical and Biochemical Engineering, University of California Irvine, California, USA
- M.S. «Chemical and Biochemical Engineering », Advisor – Gorodetsky A.A.

2017 – 2019 Department of Chemistry, New Mexico Highlands University, New Mexico, USA
- M.S. «Chemistry», Advisor – Timofeeva T.V.

2016 – 2018 School of laser and light engineering, Department of IT in the Fuel and Energy Industry, ITMO University, Saint-Petersburg, Russia
- M.S. «Laser Engineering and Laser Technologies», Advisor – Denisyuk I.Y.

2012 – 2016 School of optical-information systems and technologies, Department of optoelectronic instrumentation and systems, ITMO University, Saint-Petersburg, Russia
- B.S. «Optical engineering», Advisor – Gorbachev A.A.

Research experience

2019 - present Studying properties of cephalopod skin cells, engineering human living cells with specific optical properties, developing of infrared camouflage based on living cells

2017 - 2019 X-Ray analysis of crystal structures (cocrystals and monocrystals), working on the development of setup for crystal growth from vapor phase

2016 - 2017 Modification of polymer materials surfaces by reactive ion etching

2012 - 2016 Developing of Control optical system of deformations of oversized object

Work experience

June 2019 – present **Graduate research assistant**
Gorodetsky Group, University of California Irvine, Irvine, CA, USA
Duties:
- Development of new bioinspired materials for applications in optics and electronics
- Engineering human living cells with specific optical properties
- Studying optical and electronic properties of living cells
- Leader of the living cell-oriented research subgroup
- Teaching assistant

August 2017 – June 2019 **Graduate research assistant**
Department of Chemistry, New Mexico Highlands University, Las Vegas, NM, USA
Duties:
- Crystallographic studies of organic electronic and photonic materials
- Development of new laboratory equipment for organic crystal growth
- Technical support of X-ray diffraction instrumentation and other research equipment
- Purchasing of supplies and chemicals

August 2016 – August 2017 **Engineer**
Department of Radiology, Military Medical Academy named by S.M.Kirov, Saint-Petersburg, Russian Federation.
Duties:
- Technical support of medical equipment – X-ray, MRI tomographs, CT scanners
- Provision of medical supplies
- Working with dangerous equipment and substances
- Technical documentation

July 2015 – August 2016 **Engineer**
«Group of Optical and Technical Companies» LLC., Saint-Petersburg, Russian Federation.
Duties:
- Manufacturing of optical and optical-electronic devices
- Technical documentation
- Participation in auctions of public procurement, preparation of documentation, communication with customers
- Development of the corporate website

May 2013 – June 2015 **Media designer**
National Research University of Information Technologies, Mechanics and Optics (NRU ITMO University), Saint-Petersburg, Russia
Duties:
- Preparation and conducting media support of the events
- Configuring and debugging computer networks
- Work with sets of organizational and administrative documentation
- Light director (September 2014 – June 2015)
- Sound director (May 2013 – September 2014)
- 3D motion, computer graphics, video production

Teaching experience

Fall 2020 **Head Teaching Assistant – Engineering 1A: General Chemistry for Engineers**
Department of Chemical and Biochemical Engineering
University of California Irvine, California, USA

- Taught lecture to 140 freshmen students of School of Engineering
- Taught discussion section to 50 freshmen students of School of Engineering
- Held remote office hours twice a week
- Recorded lecture materials, prepared exams, quizzes and homework assignments for the course delivered remotely
- Graded exams and quizzes

Fall 2019 **Reader – Engineering 1A: General Chemistry for Engineers**
Department of Chemical and Biochemical Engineering
University of California Irvine, California, USA

- Taught discussion section to 35 freshmen students of School of Engineering when teaching assistants were out of town
- Held office hours twice a week
- Graded exams and quizzes

Spring 2019 **Teaching assistant – CHEM 1225: General Chemistry II**
Department of Chemistry
New Mexico Highlands University, California, USA

- Taught lab to 20 upper-division biology and chemistry majors
- Held remote office hours twice a week
- Graded lab reports

Fall 2018 **Teaching assistant – CHEM 1215: General Chemistry I**
Department of Chemistry
New Mexico Highlands University, California, USA

- Taught lab to 20 upper-division biology and chemistry majors
- Held remote office hours twice a week
- Graded lab reports

Publications

Bogdanov, G., Oskolkov, E., Bustos, J., Glebov, V., Tillotson, J. P., & Timofeeva, T. V. (2020). Molecular and crystal structure, optical properties and DFT studies of 1,4-dimethoxy-2,5-bis[2-(4-nitrophenyl)ethenyl]benzene. *Acta Crystallogr*. E**76**(6), 940–943. https://doi.org/10.1107/s205698902000674x

Bogdanov, G., Bustos, J., Glebov, V., Oskolkov, E., Tillotson, J. P., & Timofeeva, T. V. (2020). Molecular and crystal structure, lattice energy and DFT calculations of two 2′-(nitrobenzoyloxy)acetophenone isomers. *Acta Crystallogr*. E**76**(6), 857–861. https://doi.org/10.1107/s2056989020006295

Bogdanov, G., Tillotson, J. P., Khrustalev, V. N., Rigin, S., & Timofeeva, T. V. (2019). Synthesis and structural study of organic two-photon-absorbing cycloalkanone chromophores. *Acta Crystallogr*. C**75**(11), 1554–1561. https://doi.org/10.1107/s2053229619014360

Bogdanov, G., Tillotson, J. P., & Timofeeva, T. (2019). Crystal structures, syntheses, and spectroscopic and electrochemical measurements of two push–pull chromophores: 2-[4-(dimethylamino)benzylidene]-1H-indene-1,3(2H)-dione and (E)-2-{3-[4-(dimethylamino)phenyl]allylidene}-1H-indene-1,3(2H)-dione. *Acta Crystallogr*. E**75**(11), 1595–1599. https://doi.org/10.1107/s205698901901329x

Bogdanov, G., Tillotson, J. P., Khrustalev, V. N., Rigin, S., & Timofeeva, T. V. (2019). Synthesis, crystal structure studies and solvatochromic behaviour of two 2-{5-[4-(dimethylamino)phenyl]penta-2,4-dien-1-ylidene}malononitrile derivatives. *Acta Crystallogr*. C**75**(8), 1175–1181. https://doi.org/10.1107/s2053229619010398

Bogdanov, G., Tillotson, J. P., Bustos, J., & Timofeeva, T. V. (2019). Synthesis and structure of push–pull merocyanines based on barbituric and thiobarbituric acid. *Acta Crystallogr*. E**75**(9), 1306–1310. https://doi.org/10.1107/s2056989019011071

Bogdanov, G., Tillotson, J. P., Bustos, J., Fonari, M. & Timofeeva, T.V. (2019). Crystal structure of tetramethylammonium 1,1,7,7- tetracyanohepta-2,4,6-trienide. *Acta Crystallogr*. E**75**, https://doi.org/10.1107/S2056989019011411

Ashfaq, M., **Bogdanov, G**., Ali, A., Tahir, M. N., & Abdullah, S. (2021). Pyrimethamine-Based Novel Co-Crystal Salt: Synthesis, Single-Crystal Investigation, Hirshfeld surface analysis and DFT inspection of the 2,4-diamino-5-(4-chlorophenyl)-6-ethylpyrimidin-1-ium 2,4-dichlorobenzoate (1:1) (DECB). *J. Mol. Struct.*, 130215. https://doi.org/10.1016/j.molstruc.2021.130215

Ashfaq, M., **Bogdanov, G**., Glebov, V., Ali, A., Tahir, M. N., & Abdullah, S. (2020). Single Crystal Investigation, Hirshfeld Surface Analysis and DFT Exploration of the Pyrimethamine-Based Novel Organic Salt: 2, 4-diamino-5-(4-chlorophenyl)-6-ethylpyrimidin-1-ium 3-carboxybenzoate hydrate (1:1:1). *J. Mol. Struct.*, 129309. https://doi.org/10.1016/j.molstruc.2020.129309

Tillotson, J. P., **Bogdanov, G**., Jucov, E. V., Khrustalev, V. N., Rigin, S., Hales, J. M., … Timofeeva, T. V. (2019). Synthesis, structure, linear and nonlinear properties of tricyanofuran–terminated merocyanine dyes. *J. Mol. Struct.* **1189**, 146–154. https://doi.org/10.1016/j.molstruc.2019.04.001

Ashfaq, M., Munawar, K. S., **Bogdanov, G.**, Ali, A., Tahir, M. N., Ahmed, G., Ramalingam, A., Alam, M. M., Imran, M., Sambandam, S., & Munir, B. (2021). Single crystal inspection,

Hirshfeld surface investigation and DFT study of a novel derivative of 4-fluoroaniline: 4-((4-fluorophenyl)amino)-4-oxobutanoic acid (BFAOB). J. Iran. Chem. Soc. https://doi.org/10.1007/s13738-021-02432-4

Rigin, S., Tillotson, J., Perry, J., Khrustalev, V. N., **Bogdanov, G.,** & Timofeeva, T. V. (2019). Polymorphism of Merocyanine Dyes Homologues with 1,3-Diethyl-2-thiobarbituric Acid Acceptor and p-Dimethylaminobenzene Donor and Different Polymethine Chains Connecting Them. *Crystal Growth & Design*, **20**(1), 167–177. https://doi.org/10.1021/acs.cgd.9b00961

Ashfaq, M., Tahir, M. N., Muhammad, S., Munawar, K. S., Ali, A., **Bogdanov, G.,** & Alarfaji, S. S. (2021). Single-crystal investigation, Hirshfeld surface analysis, and DFT study of third-order NLO properties of unsymmetrical acyl thiourea derivatives. *ACS Omega*, **6**(46), 31211–31225. https://doi.org/10.1021/acsomega.1c04884

Publications in progress

Farrukh, A., Chatterjee, A., **Bogdanov, G.** & Gorodetsky, A.A. Cephalopod-Inspired Bioelectronic Control of Cellular Communication. Nature Biomedical Engineering. *In Review.*

Bogdanov, G., Chatterjee, A., Makeeva, N., Farrukh, A., Gorodetsky, A.A. Squid Leucophore-Inspired Three-Dimensional Engineering of Human Cells. iScience. *In Review.*

Conference publications

Bogdanov, G., Rigin, S., Gallegos, G., & Timofeeva, T. V. (2018). Custom setup for organic crystal growth by vapor deposition. *Acta Crystallogr*. A**74**(a1), a311–a311. https://doi.org/10.1107/s0108767318096897

Rigin, S., **Bogdanov, G.**, Fonari, M., & Timofeeva, T. V. (2018). Computational analysis of charge-transfer crystalline complexes. *Acta Crystallogr*. A**74**(a1), a310–a310. https://doi.org/10.1107/s0108767318096903

Total citations as of October 12, 2022: 97.

Conferences

August 21-22, 2022 San Diego, CA, USA	[INVITED] DYNAMIC MATERIALS INSPIRED BY CEPHALOPODS // Alon A. Gorodetsky, **Georgii Bogdanov** / *SPIE Vol. 12210, Organic and Hybrid Sensors and Bioelectronics XV* / Oral presentation
June 26 – July 1, 2022 Newport, RI, USA	DYNAMIC BIOPHOTONIC SYSTEMS INSPIRED BY CEPHALOPODS // **Georgii Bogdanov**, Atrouli Chatterjee, Nikhil Kaimal, Aleeza Farrukh, Alon A. Gorodetsky / *2022 Gordon Research Conference: BioAnalytical Sensors* / Poster
June 12-17, 2022 Barga, Italy	DYNAMIC MATERIALS INSPIRED BY CEPHALOPODS // **Georgii Bogdanov**, Alon A. Gorodetsky / *2022 Gordon Research Conference Biointerface Science* / Poster
November 28 – December 2, 2021 Boston, MA, USA	REFLECTIN-BASED OPTICAL STRUCTURES IN HUMAN CELLS // **Georgii Bogdanov**, Alon A. Gorodetsky / *2021 MRS Fall Meeting* / Oral presentation
November 27 – December 4, 2020 Virtual	CEPHALOPOD-INSPIRED OPTICAL ENGINEERING OF HUMAN CELLS // Aleeza Farrukh, Atrouli Chatterjee, **Georgii Bogdanov**, Alon A. Gorodetsky / *2020 MRS Virtual Spring/Fall Meeting, Online Only* / Oral presentation
November 13-16, 2019 El Paso, TX, USA	SOLID-STATE STRUCTURAL STUDY OF FLUORO-SUBSTITUTED DERIVATIVES OF 2-METHYL-2-PHENYLPROPIONAMIDE // Maria I. Barron-Gonzalez, Victoria Sena, **Georgii Bogdanov**, Tatiana V. Timofeeva, Arcadius V. Krivoshein / *American Chemical Society's 2019 Southwest Regional and Rocky Mountain Regional Meeting* / Poster
November 13-16, 2018 Moscow, Russia	STRUCTURE AND PROPERTIES OF NEW PUSH-PULL MOLECULES // **Georgii Bogdanov**, John P Tillotson, Joseph Perry, Tatiana V Timofeeva / *International Workshop on Chemical Crystallography and Structural Biology ("The Second Struchkov Meeting")* / Oral presentation
November 4-8, 2018 Rio de Janeiro, Brazil	GROWTH OF DIFFERENT CONFORMATION BY VAPOR DEPOSITION // **Georgii Bogdanov**, Tatiana V. Timofeeva / *2018 Sustainable Industrial Processing Summit and Exhibition* / Oral presentation
October 26, 2018 Albuquerque, NM, USA	STRUCTURE AND PROPERTIES OF NEW PUSH-PULL MOLECULES // **Georgii Bogdanov**, John P Tillotson, Joseph Perry, Tatiana V Timofeeva / *ACS Rocky Mountain Regional Meeting* / Oral presentation
	X-RAY AND DFT STUDIES OF NOVEL THIOBARBITURIC CHROMOPHORES WITH NONLINEAR OPTICAL PROPERTIES // Sergei Rigin, **Georgii Bogdanov**, Tatiana V. Timofeeva, John P. Tillotson / *ACS Rocky Mountain Regional Meeting* / Poster presentation
July 20-24, 2018 Toronto, Canada	CUSTOM SETUP FOR ORGANIC CRYSTAL GROWTH BY VAPOR DEPOSITION // **Georgii Bogdanov**, Sergei Rigin, Gil Gallegos, Tatiana V. Timofeeva / *American Crystallographic Association Annual Meeting* / Oral presentation
November 4, 2017 Albuquerque, NM, USA	CUSTOM SETUP FOR HIGH-QUALITY ORGANIC SEMICONDUCTOR CRYSTAL GROWTH // Evgenii Oskolkov, **Georgii Bogdanov**, Sergei Rigin, Gil Gallegos / *New Mexico Academy of Science 2017 Research Symposium* / Poster presentation

Grants and awards

1. Division of Teaching Excellence and Innovation Graduate Fellowship, $5000, July 2020
2. Medal “For the contribution to crystallography”, Struchkov Prize Association, November 2018
3. International program fellowship, ITMO University, $6000, 2017-2018
4. Scholarship of the ITMO University’s Academic Council for merit in public activities, Saint-Petersburg, Russia, $5000, 2013-2015

Additional education

1. ACA Summer course in Chemical Crystallography, American Crystallographic Association, University of Notre Dame, South Bend, Indiana, USA, 2018
2. Professional development courses «Human Resource Management», RANEPA, Saint-Petersburg, Russia, 2015
3. Change the World Model United Nations (international educational conference dedicated to the discussion about global problems of modern society), New York, USA, 2014

Skills

Computer skills:
- LabVIEW, MATLAB, Python
- Physics simulations COMSOL
- MS Office, Autodesk Inventor, SolidWorks
- Cinema 4D, 3D MAX, DaVinci Resolve
- Adobe: After Effects, Premiere Pro, Illustrator, Photoshop
- Sound production – FL studio, Ableton

Laboratory: Cell culture, XRD, FTIR, SEM, TEM, NMR, MRI, CT

Languages: Russian – native, English – fluent

Personal qualities and skills:
- Focusing on results
- Excellent communication skills
- Fast learner
- Creativity